DNVGL Subsea JIPs
Status and Way Forward
Anders Husby
The story so far....
Since the drop in oil price mid 2014, the industry focus on effectiveness and cost cutting has increased.
Steel Forgings for Subsea Applications

Challenge

- Company specific requirements to forgings for subsea systems result in long delivery times

Delivery

- Phase 1 completed: DNVGL-RP-0034 with harmonized technical requirements for forgings
- Phase 2 ongoing: DNVGL RP with harmonized quality management and surveillance requirements for forgings

Benefits

- Harmonized requirements enables stocking of forgings
- The industry will benefit from reduced lead time and better consistency, repeatability and quality of forgings

Schedule:

Phase 1: Nov 2013 – Des 2014
**DNVGL-RP-0034 – Where are we now?**

**DNVGL-RP-0034 issued Feb. 2015**
Applicable for carbon and low alloy steel forgings

**Current status**
Operators: Company requirements have been replaced by RP
Contractors: Qualifications have been performed in acc. with RP
Manufacturers: Have delivered forgings in accordance with the RP

Efforts such as this JIP are essential in economic environments that we as an industry currently are experiencing. Realization across the spectrum from operator to vendor to forgemaster that increased efficiency benefits all parties is evidenced by the number of companies implementing DNVGL-RP-0034.

*Dr. Brian Newbury, ExxonMobil*
*Steering committee chairman*
**Objective**
*To reduce cost in a lifetime perspective for subsea processing*

Alignment of operators and system suppliers through this standardization initiative can make a significant contribution in achieving this cost reduction goal”

Graham Henley, Vice President, Shell Projects & Technology
Certification of Subsea Equipment and Components

DNVGL-ST-0035 builds on global, internationally recognized codes and standards, as well as DNV GL offshore standards and references.

We have not "re-invented the wheel" or provided any new set of requirements to the industry.

In some areas clarifications of how to apply the various parts of the referenced standards have been added. These clarifications are based on past experience and found necessary for the safe and reliable operation of subsea equipment.
A truly global project

Product certificate scheme was assigned for the following equipment:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>No of Units Certified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manifold</td>
<td>5</td>
</tr>
<tr>
<td>Connection Systems</td>
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</tr>
<tr>
<td>Jumpers</td>
<td>24</td>
</tr>
<tr>
<td>Valves</td>
<td>120</td>
</tr>
<tr>
<td>XT</td>
<td>22</td>
</tr>
<tr>
<td>Subsea Distribution Module</td>
<td>1</td>
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</tbody>
</table>
The future....
Standardization of welding requirements for Subsea Equipment

CHALLENGE

A number of differing requirements for welding of subsea pressure containing equipment exists today, from the major oil and gas operator’s company specific requirements to other standards such as API, ASME and ISO.

Solution

- Develop a guideline that harmonizes requirements with regards to welding of subsea pressure containing equipment, including inspection requirements of the welds.

Benefit

- Reduced cost and time while improving quality through reduced project uncertainty and non-value added work.
- Reduced amount of qualification work performed in each project
- Enable procurement and pre-stocking of welded components

Value

- Lead time reduction up to 6 months. Achievable with standardized welding requirements and reuse of welding procedures.

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Region:  Norway

ID: 2016-20
JIP ID – 129 – Increased confidence in flexible riser integrity

**Challenge**
The failure rate for flexible pipes on the Norwegian Continental Shelf is high – 1.5% in 2013 per flexible pipe per operational year. There is currently no standard or guideline for establishing the condition of a flexible pipe in place.

**Solution**
- Establish a guideline for condition assessment of a flexible pipe based on current knowledge and new development

**Benefit**
- By use of the new guideline operators will be able to establish the condition of flexible pipes. This will result in:
  - Fewer failures
  - Life extension
  - Any replacement needed can be planned

**Value**
- May reduce production loss > 100 MNOK per year
- May reduce replacement cost > 100 MNOK per riser

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**Region:** Norway (co-operation with other regions)
## DNV GL JIPs – Subsea


### Proposed JIPs - Subsea and well

**Subsea processing JIP - Standardization of subsea pumping**
Initially, the JIP will focus on standardization of subsea pumping, an important enabler for a profitable and reliable subsea future.

**Steel forgings for subsea applications - phase 2**
The JIP shall ensure efficient implementation of the upcoming DNVGL-RP-0034 in the subsea industry. Case studies are (...)

- **Standardized subsea documentation JIP**
  As a result of this JIP (running 2014 to 2015), the DNVGL-RP-O101 ‘Required technical documentation for subsea projects’ is soon (...)

**Decommissioning assurance - Knowing your assets**
The industry has limited collaboration and knowledge sharing in decommissioning, the little guidance and few regulations (...)

**Innovation and integration of offshore service vessels**
In order to stay competitive in the market, offshore service vessels need to utilise their maximal capacity in an effective way.

**Prediction of flexible riser annulus environment**
Flexible risers can be subject to aggressive internal environments affecting fatigue and fracture performance and reducing the (...)

**Standardization of subsea welding requirements**
A number of differing requirements for welding of subsea pressure containing equipment exists today, from the major oil and gas (...)

- **Increased confidence in flexible riser integrity**
The failure rate for flexible pipes on the Norwegian Continental Shelf is high - 1.5 % in 2013 per flexible pipe per operational (...)

**Optimized decommissioning of flexible pipelines**
A number of flexible pipelines are reaching the end of their design life, but there is no best practice available ensuring that (...)

**Sour HPHT fatigue testing for clad subsea components**
The latest High Pressure High Temperature (HPHT) design guidelines in API 17TR8 require subsea equipment (...)

- **Well intervention blowout risk assessment**
  Upstream operators face increasing challenges to economically and safely operate on existing wells. Well intervention (...)

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